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GENERAL REVIEWS AND SUMMARIES

DYNAMIC PSYCHOLOGY

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Crile (2) has collected a number of addresses and papers on the interrelations of emotion, shock, and the expenditure of physiological energy, which form an important wing in the structure of a mechanistic psychology. As he formulates his results, fear, like trauma, may cause physiological exhaustion and morphological changes in the brain cells. The cause of the exhaustion of the brain in ordinary post-operative shock is the discharge of nervous energy in the futile effort to energize the paralyzed muscles in the attempt to escape from the injury just as if no anæsthetic had been given. The principle of *anoci-association* thus removes from surgery much of the immediate risk of its trauma; it places certain of the phenomena of fear on a physical basis; it explains to us the physical basis for the impairment of the entire individual under worry or misfortune. Constructively, fear is an injury which when recognized is instinctively avoided. In a similar manner anger may be softened or banished by an appeal to the stronger self-preserving instinct aroused by the fear of physical damage, such as the physical injury of brain-cells.

"The dissemination of the knowledge of the far-reaching deleterious effects of protracted emotional strain, of overwork, and of worry will automatically raise man's threshold to the damaging activating stimuli causing strong emotions, and will cause him to avoid dangerous strains of every kind. The individual thus protected will therefore rise to a plane of poise and efficiency far above

that of his uncontrolled fellows, and by so much will his efficiency, health, and happiness be augmented.

"A full acceptance of this theory cannot fail to produce in those in whose charge rests the welfare of the young, an overwhelming desire to surround children with those environmental stimuli only which will tend to their highest ultimate welfare."

Stimulation of the defensive motor mechanism leading to a physical struggle is action, and the stimulation of this mechanism without action is emotion. Harm is done by the chemical products of emotional reaction unless they are consumed by motor activity; hence the value of laughter, crying, etc., where no more concrete discharge of the emotion is possible. A special chapter presents in a general way the formulation of a physiological system evolved primarily for the transformation of latent energy into heat, the "Kinetic System" (brain, thyroid, adrenals, liver and muscles); in this conception we find a possible explanation of many diseases, one which points the way to new and more effective therapeutic measures than those now at our command. A final chapter deals with the acidity of the blood, as related to anæsthesia and the subsistence of life.

Ribot (3) contributes four essays, only the first two of which are represented in the title of the volume. The motor elements are the more stable factors in the mental process; they are the skeleton upon which the entire process is built. Unconscious mental activity depends upon the prominence of motor residuals. "One may conclude that in the unconscious, thoughts are not represented in a stable manner except by tendencies, *i. e.*, movements." There is a long discussion, involving some pathological data, of imageless thought, which results negatively, though the adherents of the idea might not accept his definition of terms. In the final chapter he takes up the principle of the economy of effort in its influence on various factors of life for good and ill, from phonetic changes to the psychogenesis of religions.

Cannon (1) has collated in book form an account of many researches by himself and his assistants, which bear on the physiological effects of major emotions. A briefer account of them, written from a more especially psychological standpoint, was taken up in this review last year. There is a short summary of the findings in regard to the effect of emotion on digestion, and a systematic account of the autonomic nervous system with its cranial, sympathetic and sacral divisions, and their relations. Six chapters deal with the

adrenin findings, the methods of demonstrating it, its secretion in strong emotion and in pain, its improvement of the contraction of fatigued muscle (raised arterial pressure and lowered threshold of response) as well as the lowering by adrenin of the coagulation time of the blood. Adrenin also causes the liver to set free sugar, whose presence in the blood further increases muscular efficiency. The effects of altered arterial pressure receive separate consideration. An analogy is found between these effects of emotional excitement and those of asphyxia. The different theories of hunger are discussed and the conclusion reached that the sensation is induced by periodic contractures of the stomach. The important conclusion may be restated that since the peripheral effects of different emotions seem very similar, their essential characteristics are probably cerebral.

The last chapter takes up the means of preserving the good features of the fighting emotions without recourse to the destructive process of war, emphasis being laid on the value of international athletic competitions in this regard. As Cannon points out, the conditions of warfare no longer furnish so suitable an outlet for the fighting emotions as formerly, since with the practical abolition of direct contact between enemies, the advantages gained from the dynamogenic products of emotion disappear. It should be remarked that conversely, hatred is no longer a proper concomitant of efficient warfare, since victory is not to the side which can exert the strongest physical force with its own bodies, but which can most intelligently direct greater forces of nature. Hatred and other strong emotions disturb this direction. The chopper who became angry at the tree he was felling might make stronger strokes with his axe, but they would be misdirected, and he would do neither so quick nor so clean a job as he who worked with "cold-blooded precision." The prizefighter knows that a sure way to victory over his antagonist is to "get his goat," *i. e.*, to make him lose his temper, when, though his blows may possibly be stronger, they will be ill-planned, easily avoided, and his defense will break down entirely. Blücher was scarcely made a better strategist by his reported mannerism of thrusting his sword through an imaginary Napoleon. That state could therefore expect the most efficient conduct of modern war from those of the best education in its methods, rather than from those dependent upon occasional fervors aroused by invasion or a traduction of national honor. Further light on these topics of Cannon's last chapter is thrown by the very

dispassionate "War Book of the German General Staff" (4), recently translated. The object of warfare is the complete destruction of the enemy's material and mental (*geistig*) resources; the suffering inflicted should be mitigated, however, in so far as this is compatible with the primary purpose.

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VOLUNTARY PHENOMENA

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Hammer's experiment (3) is of considerable interest. His subject, watching the movement of an artificial star carried by a pendulum, was to react with the finger synchronously with the passage of the star behind a vertical hair (the "transit" observation). Sometimes, however, the star was extinguished shortly before transit, and the subject was then to omit his reaction. When the star was extinguished as much as 300 σ before transit, the reaction could always be inhibited; less than 200 σ, never. Between these limits, more or less frequently. Feelings of tension were observed as the star approached the line, and feelings of release as it moved away, in the preliminary swings that were allowed before the swing during which the reaction was required. The hand seemed to be rehearsing its reaction in these preliminary swings. It was clear that the reaction began, internally, some time before the actual movement, developing gradually and agreeably, and at first outside the field of attention; unless the subject's "disposition" was unfavorable, when a disagreeable moment of sudden decision occurred, with a delayed reaction. If, now, the star was extinguished very early in its swing, before the impulse to reaction had begun to develop, there was no counter inhibitory impulse, but

simply a "standing pat." When the disappearance of the star came later, there were conflicting impulses toward reaction and inhibition; and the later it came, the stronger was the reaction-impulse, and the more difficult of inhibition. If the disappearance came too late, the inhibitory impulse failed altogether to develop, the subject accepting the situation without struggle or unpleasant feeling. When the struggle was close, the feeling was very unpleasant; when the inhibitory impulse had an easy victory, the feeling was one of satisfaction.

As a voluntary act for introspective analysis, with objective registration also of reaction time and of breathing and pulse, Kramers (4) chose the recognition of four-place numbers, previously shown, with reaction by finger movement—the instructions sometimes calling for reaction with recognition and non-reaction with non-recognition, sometimes for the reverse, sometimes for reactions with different fingers to recognized and unrecognized stimuli. The purpose in thus varying the instructions was to facilitate introspective study of the process of reaction. It was found much easier to connect reaction with recognition than with non-recognition, the latter requirement often leading to false reactions. This fact is interpreted in terms of the Wundtian feelings; in recognition the feeling is one of release, in non-recognition one of tension; and the reaction-feeling, being itself one of release, fuses more readily with the recognition feeling than with that of non-recognition into a total-feeling from which the voluntary act can develop. There are other similar observations, similarly interpreted; but the author himself prefers not to insist on his results, believing that his contribution consists mostly in opening up the problem and suggesting methods. He suggests that retrospection may be either immediate ("reapperceptive") or delayed ("reproductive"), the former being suited to bringing out what is peculiar to a single experience, and the latter, carried out after a long series of similar experiences, being suited to the discovery of what is common to all of them. This reproductive retrospection is apparently identical with the old "reflexion," which psychologists have been trying to banish from the science. The author gives no clear-cut instances of results gained by this method.

Bauch (1) follows up the work of Marbe and others on "uniformity of reactions," the best-known expression of which is found in the "frequency tables" for free association, by allowing his subject a choice of several arm movements, with instructions, however,

to execute the movement as rapidly as possible. On a horizontal table, seven points were placed at distances of 160 mm., forming a regular hexagon with its center, and, the finger being placed on any one of the points, was moved at a signal to any other point, while the reaction time in starting and the duration of the movement were recorded by Marbe's smoke method. From each starting point, some one terminal point was more frequently, and usually much more frequently, chosen than any other. The frequent movement was more rapid than the less frequent, was more often flexion than extension, and, as shown by supplementary observations, was apt to be judged the easiest or most convenient movement from the given starting point. The result, then, comes apparently to this, that the easiest and quickest movements are commonly selected when rapidity of movement is desired, and that they are either known from past experience or quickly discovered in the course of a series of trials.

Bleuler (2) attempts to show how the concept of "*Schalten*," or switching in the nerve centers, affords a basis for accepting psychic causality and the reality of will. The path and outcome of a reaction are not determined wholly by the stimulus, but partly by central influences which shunt it in or out, hither or thither, and thus inhibit, release or direct it. The whole personality is concerned in these switching operations, and the act of will consists in the influence thus brought to bear by the personality on the outcome of any single reaction. Voluntary action differs only in degree from emotional and reflex action, which also are subject to switching; and, in fact, there is no difference in principle between physical and psychical causation.

Among other interesting observations by Sano (5) on the behavior of the inhabitants of Antwerp during the bombardment, is the following which bears on the study of will: without much sign of fear, introspective or objective, there was so great an absorption in the condition of affairs that serious work on any other subject was impossible, while there was an overflow of energy into such channels as talking and letter-writing. Those who fled to Holland showed extraordinary resistance to fatigue, a fact which leads the author to conjecture that, in spite of the absence of violent emotion, the adrenals may have been stimulated as in fear or rage.

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LOCOMOTOR FUNCTIONS

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The articles summarized in this review fall rather definitely under three headings: the energy relations of functioning muscles, physiological experiments on the locomotor reflexes and pathological observations on disturbed locomotion. Benedikt (1), in addition to describing a case of paralysis of the muscles supplied by the peroneus and the tibialis nerves, applies Watt's formula to the performance of any muscle. According to this formula, the efficiency of a muscle is represented by mht, the product of the muscle force, m, into the distance, h, through which the muscle acts, and t, the duration of the action. The energy transformations of man upon a horizontal path are calculated by Brezina and Reichel (2), from experimental data determined by Brezina and Kalmer in 1911. The problem of the relation of the size of the animal body to the velocity of locomotion is attacked by DuBois Reymond (4) on the basis of experimental observations made by O. Fischer. DuBois Reymond questions the conclusions of Fischer that the law of corresponding velocities applies to human beings as well as to inanimate self-propelling objects such as ships. The law is stated as follows: if the resistance of the water to a ship of the size, l, with a velocity, v, is equal to r, then the resistance of a ship of the size, nl, with a velocity $v\sqrt{n}$ is equal to n^3r^3, *i. e.*, is proportional to the cubic contents. It has been supposed that the same law holds for human locomotion. Therefore with equal muscular effort, the velocity of larger and smaller men would be proportional to the square root of the length of the body, *i. e.*,

$$\frac{v_1}{v_2} = \frac{\sqrt{l_1}}{\sqrt{l_2}}.$$

O. Fischer made observations on 103 soldiers and 8 students. These subjects walked at "*Wanderschritt*" a distance of 2 kilometers. The length of body, length of step, length of leg, number of steps and velocity were determined. Using this data, DuBois Reymond attempts to determine the applicability of the law of corresponding velocities to human locomotion. He divides the 111 subjects of Fischer into nine groups according to the length of the body. With these figures he correlates the velocity of travel. Reducing the results to percentages, he finds that the small individuals have a somewhat greater speed of movement than the larger individuals. The average height of the two larger groups was 172.1 cm., that of the two smaller groups 160 cm. The ratio of the roots of these numbers is 1,000 : 962, while the ratio of the velocities of the two groups is 1,003 : 1,002. DuBois Reymond concludes that the law does not hold for human locomotion. The absolute force of a muscle is measured by the greatest weight which a muscle can just raise. Reys (9) has attempted to calculate that quantity for the human triceps suræ. First estimating the volume of the muscle, he obtains the value of 566 kilograms as the absolute force of this muscle in a strong, healthy, man. The same unit for each square centimeter of cross section of the calf muscle is 5.2 kg. The effect of high altitudes on muscular work was studied by Vallot and Bayeux (10) by recording the number of revolutions of a squirrel cage at a low level and again in the mountains. Three squirrels were used at Chamonix and at Mont Blanc. The average number of turns of the cage at Chamonix was 6,700 per day. At Mont Blanc the average number of turns was 924 and, after two weeks at Chamonix, was 7,435 per day. Regnault (8) distinguishes three forms of locomotion in man, viz., walking, gymnastic exercise and running. Walking is most advantageous in slow locomotion. According to the results of Marey and Demeny, the optimum rate of step is 60 to 65 per minute. This gives a man of 167 cm., making a step of 140 cm., a distance of 5,040 to 5,460 meters per hour. Above that from 65 to 75 steps per minute the work increases very rapidly and is disproportionate to the result. For more rapid locomotion the author distinguishes *la marche en extension* from *la marche en flexion.* Ponzo (7) records a curious illusion of size which depends upon a change in volume of the fingers caused by the pulse. Objects held between the fingers seem to enlarge and contract with the pulsations of the heart. The movement is attributed to the object and not to the fingers. The author describes an experiment in which, with a

card 25 by 15 cm., the apparent movement can be reproduced. The experiment is classified as an objectification of movement which is a result of the law of the excentric projection of sensations. The relation of the production of heat in a muscle to the time of appearance of the contraction has been studied by Herlitzka (6) by means of a suitable recording apparatus and a thermoelectric pile for determining the presence of a change in temperature. He found that there was a considerable difference in time between the contraction latent period and the thermic latent period; the former was always the shorter. The author holds that the liberation of heat is to be considered an effect and not the cause of the contraction. Adrenin exerts a powerful influence upon smooth muscle fiber. Its effect upon striated muscle has been a matter of doubt. Yas Kuno (11) working with sartorius muscle, with a solution of the drug of 1 : 16,666, found that there was no physiological effect. Application of the adrenin to the rami communicantes in the caudal region of the cord produced no change in the tonus of the legs. In the decerebrate animal, Sherrington demonstrated a plastic extensor tone. T. G. Brown (3) observed a condition of plastic flexor tone in monkeys both after decerebration and chemical narcosis. The author suggests that the phenomenon may be due to the action of the nucleus ruber, for the reason that he observed a similar condition after excitation of that center. It has long been known that locomotion which has been lost as a result of disease of the central nervous system may be regained in certain cases by appropriate exercises. Gordon (5) describes, from the point of view of the clinical neurologist, the nature of the exercises which are beneficial in diseases of the nervous system.

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REACTION TIME

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Woodrow (3) proposes to measure attention by efficiency in simple reaction. Unfavorable preparatory intervals and weak intensities of stimuli were used as detractors, the latter for securing different degrees of attention, and the former to serve as detractors with each of these degrees. When the preparatory intervals of 1, 2, 4, 8, 12, 16, 20, 24 seconds were presented in a regular order, there was a gradual increase in the reaction times expressed as a law that the reaction time equals a constant plus the product of the logarithm of the interval and a constant. When the intervals were presented irregularly there was little difference in the reaction times, all being much lengthened. The prolongation of the times is due solely to the fact that attention is not maximally adjusted. This gives the basis for a satisfactory method of detraction. Different degrees of attention were secured by using four widely different intensities of light and the detraction effect of unfavorable preparatory intervals on each intensity was determined. The results are formulated in the law for any preparatory interval of 2 seconds or over: "The absolute increase in reaction time produced by the use of unfavorable intervals as detractors varies inversely as the degree of attention detracted from." Choice reaction times are influenced fully as much by irregularity in the preparatory intervals as are simple reaction times and the same law of detraction holds for both. Experiments on the effects of practice seem to show that contrary to common view the degree of attention does not improve with practice.

Williams (2) studied the correlations between reaction time,

form of movement and the direction of attention with especial emphasis on "antagonistic reactions." In the typical motor reaction as contrasted with the sensory reaction, aside from the shorter reaction time and the direction of attention to the movement to be made, there is a gradual decrease in the pressure of the finger on the key from the preparatory signal to the beginning of the final movement of lifting the finger. Except in cases of lowered attention, unintentional sensory attention or distraction there were no antagonistic movements. In the sensory reactions the pressure on the key remained uniform or increased from the preparatory signal to the final movement which was then antagonistic in form. The average correction for the antagonistic reaction was 30σ. Marked evidence is shown of types of reactions in attention, in reaction time, and in form of movement.

Ziehen (4) in a short paper reports simple auditory reactions of a Lapp and two Samojeds as $137\,\sigma$, $148\,\sigma$ and $135\,\sigma$. Cognition reactions to sounds with a lip key gave times of $410\,\sigma$ and $512\,\sigma$. Little value is placed on the figures, but further study particularly of complex reactions is recommended.

Todd (1) describes a new pendulum chronoscope with a disc tachistoscopic attachment, conveniently and compactly arranged for mechanical or electrical operation in determining simple reaction times to visual, auditory and tactual stimuli and compound reactions to visual stimuli. The chronographic method used apparently gives a very accurate chronometric scale.

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FATIGUE, WORK, AND INHIBITION.

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In a study of the effects of continued work for four hours upon writing poetry, Thorndike (13) finds "that the speed of work increases throughout the work-period and is not benefited by a rest of 24 hours. The average quality of the product produced falls off a very little during work and is slightly benefited by the rest. The reported satisfyingness of the work falls off greatly during work and is greatly benefited by the rest."

Ash (3) finds noticeable fatigue in steady adding for periods of even one hour. The fatigue was measured by "before" and "after" tests in which the subject was required to reverse continually the perspective of an ambiguous figure. This experiment, Ash believes, shows that mental exertion does have a decided effect upon another single specific mental function, affecting, however, not so much amounts of available energy, as the control of that energy. When this interference of control is thus measured it is found that it requires 11.5 minutes for complete recovery from 30 minutes of work and 47 minutes for 150 minutes of work. The relationship between work-period and recovery-time is thus very different from the findings of Mosso. Ash also finds that there is a slowing up in reversal time as one advances from 9 A.M. to noon, an increase in speed after lunch, and subsequent loss in speed as the day advances. Hollingworth (7) finds that processes essentially motor in character, such as tapping and typewriting, are facilitated by continuous work throughout the day; that processes involving coördination are first accelerated and then retarded; and that processes essentially mental in character show fairly uniform loss of efficiency. He feels that the conclusions point not to a general or special fatigue factor but rather to the presence of a complex work mechanism standing over and above the transient factors of interest, incentive, etc. Martin, Withington, and Putnam (9) also speak of a general fatigue, which shows itself in a fairly continuous decline in irritability, as judged by the sensory threshold as the week advances with a return to the original high point after Sunday's interruption of the regular routine.

Pyle (11) finds a less striking superiority of distributed over concentrated work-periods when learning typewriting than in his earlier experiments in substitution.

Weber (14, 15, 16, 17) shows that muscular work brings about an increase in the blood supply to the musculature of the body at the expense of the blood supply in the viscera. Now as fatigue ensues this increase in blood supply disappears and finally there is a reversal of the original situation. He also finds that if after vigorously exercising a group of muscles, another group is put to work after an interval of about eight minutes there will result not the customary increase in blood supply but a reversal of this blood change. If the interval of time, on the other hand, is less than eight minutes there will be the usual increase in blood-supply. Evidently then when work and rest periods are to be alternated the latter should not exceed eight minutes in length. He shows still further that if, instead of alternating working periods with rest periods, in the case where a small group of muscles are being employed, the working periods are alternated with short periods in which another group of muscles are vigorously employed, there will result a decided increase in efficiency, even as much as 40 per cent. The small muscles as they tire tend to bring about a reversal in the blood supply to the muscles (pointed out above). The activity of the new set causes a decided increase in blood flow which benefits the tiring muscles by washing away the fatigue-products.

According to Amar (1) the rhythm and amplitude of the blood pressure increase with the rate and amount of work. Normal work is accompanied by a regular curve, whereas when the conditions of the muscles become abnormal it is shown by an irregular curve. In a later study (2) he goes into many details as to the "cardiogrammes" of fatigue.

Gruber (5) reports that "adrenalin causes a rapid recovery of the normal irritability of muscle after fatigue and thus a betterment in the height of contraction." Whether this is done by neutralizing, transforming, or destroying the fatigue toxin is still unknown. In (6) he reports that "adrenalin is an antagonist to curare and decreases in 5 minutes or less the curare threshold, in some cases to normal."

Krieger (8) attacks the findings of Atwater and Benedict who found the energy of alcohol is not utilized by the body. He finds this is the case at first, but not to be true after periods of 3 days, the maximum interval of time studied by Atwater and Benedict, Krieger, however, adds that although alcohol may furnish energy for muscular work, still because of its proven bad effects on the body, its use should be condemned.

Foucault (4) presents an interesting mathematical formula which he believes covers the laws of work. He also gives some very surprising illustrations of the superiority of distributed over concentrated work.

Patrick (10) holds that the mental activities developed late in the history of the race, which are so important in the life of civilized man, are particularly prone to quick and extreme fatigue. It is not then close attention which of itself produces fatigue, for close attention in golf has no such effect, but it is the holding of ourselves down to hard work and hard thinking and long-sustained tasks which brings about exhaustion. As a corollary to this view, Patrick adds that the child plays because he cannot do anything else, as his higher brain processes are not developed so that he can work.

Stiles (12) has gathered together in his new book a good deal of interesting material on fatigue and general nervous impairment.

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SPECIAL REVIEWS

An Outline of Psychobiology. K. DUNLAP. Baltimore: The Johns Hopkins Press, 1914. Pp. 121.

Professor Dunlap has given us an excellent manual which is sure to find an appreciative public when once the significance of the rather formidable title is understood. "Psychobiology" has hardly as yet won a place in our terminology and it may be doubted whether one person in ten would at all suspect the content of this book from an inspection of the label. Moreover, after one has made inspection, the extreme preponderance of the biology in it over anything conventionally connected with psychology, impels one to question still further the propriety of the title. However, "What's in a name?", the main thing is the material itself and that is certainly good.

The author has brought together in compact form the information concerning the body structures and functions most essential for students of psychology. We have accordingly chapters on the cell, the adult tissues, muscular tissue, nervous tissue, afferent and efferent neurons, gross relations of the nerves, spinal cord, brain and other ganglia; the visceral division of the nervous system, glands, the functional interrelation of receptors, neurons and effectors. The statements are notably clear and concise and the text is profusely illustrated with plates for the most part excellently chosen and finely rendered. In the preface occurs this sentence:

"Of late it has been becoming clear that the pressing need in psycho-physiology is for the study of muscle and gland, and that only through the study of these tissues in their structural and functional relations to nervous tissue can neurology be made psychologically valuable."

To the form of this statement many psychologists would probably demur, although with its general intent we should perhaps all agree. It is, however, a striking testimony to the actual situation that despite Professor Dunlap's conviction, he gives only somewhat over one sixth of his space to glands and muscles. With the rapid accumulation of knowledge now in progress presumably later editions of his book may see this ratio substantially altered. Meantime, whether or not one be wholly sympathetic with the view which magnifies glands and muscles quite so markedly, it is past all ques-

tion a sign of wholesome progress that the entire physiological organism should be recognized as significant for the appreciation of mental experience and not merely the nervous system taken in isolation.

The reviewer has been somewhat puzzled, in view both of Professor Dunlap's expressed opinion and of many distinctive aspects of contemporary psychology, that the author has seen fit to subordinate so completely all discussion of the sexual apparatus. There is only the most incidental reference to the matter.

The printers have done their work well and we predict a wide welcome for the text, which is dedicated to Professor George M. Stratton.

JAMES R. ANGELL

UNIVERSITY OF CHICAGO

The Man of Genius. H. TÜRCK. (Trans. by G. J. RANSOM.) New York: Macmillan, 1914. Pp. 483.

For all its bulk, this book is little more than the elaboration, or reiteration, of a single thesis, derived from Schopenhauer and Goethe, namely, that genius consists in objectivity, in contrast to a subjective self-seeking. While the ordinary man is limited by personal ends that control all his activity, the genius has the power of becoming absorbed in an object and interested in it for its own sake, or, we may say, loving it. Absorption in a sensed object gives esthetic contemplation—in an object conceptually thought of, philosophy; and absorption in an act makes that act play as opposed to the drudgery of the ordinary worker. A genius of action—Alexander, Cæsar or Napoleon—though perhaps selfish in petty affairs, is in the main devoted to realizing ideas by which he is possessed. "For the very reason that the man of genius, deep down in his heart, neither fears nor hopes anything and is untroubled by anxiety for the present life or the hereafter, he can devote himself to his work with all his soul, with a love which is disinterested—disinterested taken in the wider sense as exemplified by the man who, in all sensations, thoughts, and actions does not always in bitter earnest keep in view the ultimate practical result to himself or to others connected with him, but rather, as if playing some game, takes delight in the object itself to which his sensations, thoughts, or actions tend" (p. 276). Objective absorption reveals itself in the keen sense for reality, and the energetic living in the present, of such men as Cæsar and Napoleon. That which most

opposes genius is the Care of Goethe's Faust, the *elpis* or hope and dread for the future of the myth of Pandora's box, the "knowledge of good and evil"—*i. e.*, consideration of advantage and disadvantage—of the Biblical Fall of Man. Genius, as known to men of genius, is portrayed by Shakespeare in Hamlet, by Goethe in Faust, and by Byron in Manfred; and the author is at some pains to analyze these cases and show therein the validity of his thesis. Lombroso, of course, he will have none of; but his pet aversion is Nietzsche and the like, who exalt self-seeking and belittle devotion, truth and objectivity.

It is curious, from the psychological standpoint, that the author should identify genius with a certain attitude or interest, to the neglect of the factor of intelligence and ability.

R. S. WOODWORTH

COLUMBIA UNIVERSITY

Die Mechanik des Geisteslebens. M. VERWORN. Leipzig: Teubner, 1914. 3d edition. (Sammlung "Aus Natur und Geisteswelt," Bändchen 200.)

This little volume opens with a short chapter on "Body and Soul," which is somewhat comparable with the opening pages of Ernst Mach's "Analysis of Sensations." Here Verworn makes the somewhat singular distinction between obtaining the sensations of another man "subjectively" and "objectively." One can have the same sensations as another *subjectively* by putting oneself in the same circumstances as he is in, *e. g.*, by looking at the same thing in the same way; but *objectively* one can completely know (*restlos erkennen*) the sensations of another by making a complete study of the other's brain.

Then follow two excellent chapters on nerve physiology, with special reference to the physiological mediation of conscious phenomena. The two together form a remarkably compact, scientific, and satisfactory picture of physiological psychology, not a little of which is decidedly constructive and original. The reviewer earnestly commends this portion of the work, which if it could be obtained in English would make an invaluable auxiliary text-book. The fourth chapter, on "Sleep and Dreams," gives a theory of sleep and an exposition of Verworn's important theory of "inhibition by interference" (of nerve currents). The last chapter, on "Suggestion and Hypnosis," is of less importance, and was possibly added for the sake of popular appeal.

This is an admirable work, small as it is, and one which those, at least, who are endeavoring to carry out the behavioristic programme will certainly wish to read.

E. B. HOLT

HARVARD UNIVERSITY

Sexual Ethics: A Study of Borderland Problems. R. MICHELS. New York: Scribner, 1914. Pp. 288.

This volume, published in the Contemporary Science Series, is a wholesome, broad-minded, tolerant, and gossipy discussion, full of illustrations drawn from literature, scientific work, and personal experience. The author emphasizes the necessity for frankness, truthfulness, and simplicity in approaching the subject of sex with children, but is inclined to question the wisdom of school instruction. The ideal education in matters of sex is to have questions honestly answered by parents whenever they arise.

Michels is confident that our present standards of sexual ethics are wrong, but is not quite so sure as to the wisest method of changing them. It should be frankly recognized that every human being, male or female, has a right to normal sexual experience. The most fundamental ethical standard for the sexual relationship is that it should be founded on the deliberate consent of both participants. The immorality in our present situation has its source in economic conditions and its most evident manifestation in prostitution. Prostitution is due to the fact that large numbers of men of the middle and upper classes marry late and demand previous sexual experience which starts bad habits and low ideals of sexual life. The superfluous women of the proletariat have little chance under their social conditions to preserve their chastity, and are easily tempted by the offer of some of the luxury and ease which is so completely denied them on any other terms. The prostitute he calls the old maid of the proletariat.

The only hope for correcting this state of affairs lies in developing the personality and economic independence of women. When the two sexes are on more equal social and economic terms the standards of conduct for both will gradually become the same, and will approach more nearly those now maintained for women, though they will be interpreted in a more liberal and sympathetic spirit than at present. One important element in bringing about such a change is to teach the duty of the voluntary limitation of the size of families with reference both to economic conditions and to

the development of the personalities of the parents. Women should have broader interests than at present and be educated to make a wiser adjustment among the conflicting demands of husband, children, and personal development.

The chapter on comparative sexual psychology in various countries is disappointing because it contains only the psychology incidental to a description of the love-making customs of modern Europe.

HELEN T. WOOLLEY

CINCINNATI, OHIO

The Musical Faculty. Its Origins and Processes. W. WALLACE. London: Macmillan, 1914. Pp. viii + 228.

The chief interest which this book may have for the psychologist rests in the more or less acute observations of a musician in his own field, together with certain conclusions approximating closely to long accepted principles of psychology. The naive and tentative manner in which such conclusions are drawn is, at least, refreshing (by way of illustration, the author's theory of perception as being the resultant of a large number of stimuli). The work as a whole is highly unsystematic. Indeed, the musical faculty is regarded as a phenomenon so peculiar that it eludes such investigators as Helmholtz, Stumpf and Gurney. Psychology is referred to as a word somewhat out of favor, "having become a pass-word for a great many crude ideas." The chief contention seems to be that there is no standard of excellence in music. Its center of gravity is constantly shifting. There is little or no development to be noted from composer to composer. The influence of heredity is inconclusive, while the association of genius with mental abnormality is vigorously contested. The book ends with a bibliography which gives some eighty odd titles of heterogeneous works.

R. M. OGDEN

UNIVERSITY OF KANSAS

The Feelings of Man: Their Nature, Function and Interpretation. NATHAN A. HARVEY. Baltimore: Warwick and York, 1914. Pp. viii + 276.

The feelings, we gather, according to this author, include pleasures and pains, emotions, sentiments and moods, also such experiences as warmth, hunger, thirst and fatigue. The now

familiar distinction between pain and unpleasantness is rejected, as is also that between "physical" and "mental" pain, which differ, we are told, only in degree. What, then, is the common element of "feeling" in these experiences? The answer is that feeling is affective process, and by affective process is meant "any kind of a mental process that has for its conspicuous characteristic pleasure or pain." Here, however, we encounter a difficulty. If, as is claimed, pleasure and pain are merely "properties" or "tones" of feeling, what, we ask, is it that has these properties? Pleasure and pain are notoriously universal; they attach to any and every kind of experience and often appear more conspicuously in connection with cognitive processes, as, *e. g.*, certain memories and expectations, than in some cases of emotion, as, *e. g.*, anger, which is usually more definitely characterized by impulsive tendencies than by affective tone. Why, then, is not every mental process accompanied by pleasure or pain affective and, consequently, a feeling? Or, if there is a specific feeling process of which pleasure and pain are the attributes, what is the nature of this process? And why, if there be such a process, should the several kinds of experience referred to above be specially selected and grouped together as "the feelings"? The author does not meet the difficulty on psychological grounds, but proceeds from the formal definition to a physiological theory.

The theory is as follows. Feeling, it is contended, is "the concomitant of the resistance which a nervous impulse encounters in passing through a nervous arc." Other mental processes, or features of the total mental process, are held to correspond to other factors of the current. Thus, while feeling corresponds to the energy "stopped out" or "destroyed," sensation corresponds to the impulse passing through the brain centre. This, it is claimed, clearly discriminates between feeling and sensation and also, in principle, between feeling and the intellectual processes generally. Consciousness, which properly means awareness, is a frequent but non-essential accompaniment of mental processes and corresponds to the irradiation of the impulse into fringing cells that are neither motor nor glandular. Memory is concomitant with the reinstatement of a nervous impulse in the same brain centre that it passed through before and its radiation into the same fringing cells. Attention is the concomitant of the process by which a nervous impulse is directed into and through a brain centre; the resistance in positive attention is increased, in negative diminished, the vari-

ation being presumably due to the shifting of the dendrites. Will is the concomitant of the driving force of the current, plus attention, which directs the force. Finally, the ego is the concomitant of the transmission of the impulse through cells that have been traversed before.

One can but admire the simplicity of the construction, in which respect it accords with the psychological simplification which is made of the whole of the individual's experience into sensation, feeling and consciousness. This opens up large and fundamental questions, which obviously cannot be entered into here. One general remark, however, may be permitted, namely this: whatever the value of such hypothetical constructions as these for psychology—and the present writer rates them at the lowest—they must at least correspond to analysis of the facts. It is in vain to plead the advantage of stating mental facts in physiological terms because of the difficulty of picturing them always "in visual, auditory or tactual images" (p. 29): why should they be so pictured? Why "picture" them at all? It is admitted that they are directly observable; at any rate, they have the right of way. Judged by this rule, the hypothesis here propounded seems in part dubious and in part false. The clearest illustration, perhaps, is that of memory. As the author himself points out, analysis shows plainly that memory is more than the mere faint reinstatement of a past experience. It includes not only re-cognition, but recognition as of something known or experienced in the past. The experience, in fact, is unique; new factors emerge and even the sensuous content, in respect to which the two experiences are most comparable, is variously modified. Is it then credible that, as the theory asserts, it should have no other basis than the passing of the current through the same identical cells? Identity of concomitance would seem to imply identity of experience, in kind, if not in degree. Here we have a *generatio æquivoca.*

On the same principle objections may be brought against the theory of feeling. The distinction between the passage of a current and its resistance is clear enough, and it is easy to say that sensation corresponds to the one and feeling to the other; but it is equally obvious that this distinction does not in the least enable us to discriminate between sensation and feeling and to determine, *e. g.*, whether pain or warmth is to be correlated with the one process or with the other. In any case the diversity of the experiences grouped together as "the feelings" would seem to demand a corre-

sponding diversity in the concomitant physiological processes; the difference, *e. g.*, between the feeling of warmth and the feeling of rage cannot well be reduced to a difference of intensity. But even if we grant that they are in a peculiar manner different manifestations of a common nature called "feeling," it is hard to reconcile the admitted differences in the properties of this common nature with the notion that they are correlated with nothing but differences in the amount of resistance or "stopped out" nervous energy. The author, indeed, actually contends that pleasure and pain are not specifically different, but differ rather quantitatively than qualitatively (p. 94). This is incredible, and the argument to support the contention, namely, that a feeling of painful tone may pass over into one of pleasurable tone, and conversely, lacks cogency. Our ability to give meaning to the expression no more justifies us in supposing that the one "property" becomes the other than the "passing over" into zero of a quantity at the limit of a diminishing series justifies us in assuming that something becomes nothing. Another consequence of the theory is that, with a given amount of nervous energy, feeling and intellect are in inverse ratio. Possibly this is true, but it seems to have little bearing on the concrete question whether, in a given case, intellectual work is stimulated or obstructed by feeling. The conception of a given quantity of energy is general and abstract, like the conceptions of the current and the arc; why should not the energy concomitant with feeling liberate other energy, set other currents running in other arcs? We are told, to be sure, that intellect and feeling vary directly as the strength of the current, but since they vary inversely to the resisting power of the arc, the interpretation which the author himself puts on the "law" is adverse to the claim that feeling is ever a spur to intellectual activity. That sudden and strong emotions disturb the flow of the activity they invade and sometimes arrest thought altogether, is a commonplace; and this fact, favorable to the interpretation, accords badly with the theory that intellect and feeling vary directly with the strength of the current. But is the same true of sentiments and moods, or even of all emotions? The author cites as an illustration the interference with the learning of lessons produced by an invitation to take a longed-for journey. But this seems irrelevant. The invitation is likely enough to set up an abundant flow of imagery, of plans of travel, etc., and we have no standard as yet for measuring the amount of such cognitive processes as against that involved in the learning of lessons. And

when, ignoring the effect of pleasurable interest, the very best intellectual work is said to be done with least fatigue when *no* feeling accompanies the process (p. 149), the theory loses touch with experience altogether. We are not after this surprised to find the opinion that men of great intellectual eminence who were also men of deep feeling would have greatly increased their intellectual output if they had employed all their energy in intellectual work, letting none of it be destroyed by feeling (p. 153). Abstractly the proposition seems a truism; in the assumption that energy is destroyed by feeling it merely transcribes the hypothesis. But it may be very much doubted whether the wide-eyed student of human nature would not pronounce somewhat differently on the facts, which, moreover, are by no means all of the same order.

Similar objections to the theory arise in connection with the view here set forth regarding the relation of feeling and action. The view current among many of the shrewdest observers—one involuntarily thinks of Hobbes and Hume—is that the great driving force in human life is to be found in the passions. If we include among "the feelings" those of hunger, thirst and sex, the scope of this opinion is manifest. Our author, however, holding that feeling is the concomitant of energy resisted (or, as he sometimes writes, "destroyed") and that the concomitant of the energy passing through the arc is the idea, maintains that the driving force in action corresponds to the idea and that feeling enters into the motive only in the selection of the action to be performed (p. 271). This is hard to believe. Conation seems to be an aspect of all vital process and to go on often with a minimum of idea, or with no idea at all. And where idea is present, it seems impossible, except on the exigencies of the theory, to thus distinguish in the motive the selective function and the driving force. The lover seems impelled no less by his affection than by his imagination; neither apart, but both together appear to be at once selective and the force which drives him on.

The claim, then, that the theory conforms to all the facts of feeling does not seem to be justified, but whether it is or not it is impossible to say apart from a clearer definition of feeling. The book, moreover, is lacking in historical perspective, and shows an exaggerated sense of the contrast between the "old" psychology and the "new." It represents as the common opinion that feeling is a pure activity of a self-existent entity called mind, uncaused by anything "except the self-activity of the mind itself," so that

"the mind can feel as it wishes to feel, no matter what may be the nature of the intellectual process that precedes" (p. 15), and, since no authorities are cited, the statement cannot easily be refuted. But this is certainly not the opinion of any reputable writer. There are modern psychological theories of feeling, such as those of Lipps, Ward and Stout, which are quite worth studying, and physiological psychology, witness Hartley and Bonnet, is not the product of the past twenty-five years. In particular, the theory of affective phenomena has been predominantly physiological from Hippocrates down.

H. N. GARDINER

SMITH COLLEGE

Nervous and Mental Diseases. A. CHURCH AND F. PETERSON. (8th rev. ed.) Philadelphia: Saunders, 1914. Pp. 940.

This work, now in its eighth edition, has been extensively recommended by teachers and used by students, and for purposes of teaching the main facts regarding nervous and mental diseases is excellent. Like many other medical textbooks, however, it is not scientifically satisfying either for a student desiring more than the elements, or for the practitioner who desires to diagnose and understand his patients. It is unfortunate that because of the personal predilections of the authors, or it may be to prevent too great expense to the publishers for a thorough revision, some well-recognized mental diseases remain under the section of nervous diseases, and certain diseases have not been suitably classified and dealt with. As an example of the latter may be cited "sleeping sickness" which, although in many respects similar to general paralysis of the insane, is classed under the general heading of symptomatic disorders, section of disorders of sleep. In the same section hypnotism is dealt with. Only custom can be appealed to to sanction the inclusion of such frankly admitted mental diseases as psychasthenia and hysteria in the part of the book devoted to nervous diseases, and to reserve for the mental disease portion of the book only those which can be grouped under the headings insanity and feeblemindedness.

The treatment of psychological topics is short of being satisfactory. There are many bold statements of mental-cerebral relations which are open to question, and some which give a clear view of the inadequate psychological conceptions of the average medical man. Thus, we are told that "a stimulus to the eye arouses

a sensation in the occipital lobe," and that memory pictures are stored up in the cortex.

SHEPHERD IVORY FRANZ

GOVERNMENT HOSPITAL FOR THE INSANE

The Origin and Nature of the Emotions. G. W. CRILE. Philadelphia: Saunders, 1915. Pp. vii+240.

This volume is made up of nine more or less related papers read before various associations, chiefly medical, in the years 1910 to 1914. The subject of the title is referred to illustratively in several and is specifically treated in a paper on "Phylogenetic Association in Relation to the Emotions" dating from 1911. The theory propounded is the familiar one that "emotions are primitive instinctive reactions which represent ancestral acts." The evidence is largely derived from experimental and clinical studies of fear. It is pointed out that fear is probably exhibited only by animals whose natural defense is nerve-muscular,—not, for example, by the skunk and armadillo; that the organs and tissues stimulated are those actually utilized in a physical struggle for self-preservation; that experiment discovers in extreme or prolonged fear physiological and histological changes analogous to those of fatigue; and that clinical evidence tends to show that fear, when unaccompanied by physical activity using up the activating secretions from the thyroid, the adrenals and the hypophysis, is more injurious than, apart from gross injury, actual physical contest. Fear, then, is to be regarded as a response to phylogenetic association with physical danger. *Mutatis mutandis* a similar hypothesis applies to anger and love; fear is preparation for flight, anger for attack, love for copulation. But the activities stimulated are not consummated; part of the theory appears to be inhibition of action. When the "stimulations are sufficiently strong, but no action ensues, the reaction constitutes an emotion" (p. 76). An analogy is found between an animal under the influence of fear and an automobile with clutch thrown out and the engine racing at full speed; the machine doesn't go, but it may tremble.

This inhibition of action constitutes a problem for the phylogenetic theory. The usual explanation is that it is brought about by changed conditions with no new organs to meet them, and this is the explanation adopted by our author (p. 61). In the case of civilized man custom and convention play their part also. But does the same explanation apply to savages and the lower animals? Savages are commonly represented as living in perpetual fear, and

on p. 27 of this book is a lurid picture of a bird fascinated by a snake as illustrating a creature dominated by this emotion; why is action inhibited in these cases? Moreover, in some cases what we find is not so much inhibition of all action as an apparent break-down in the coördination of factors within the teleologically conditioned response. What is the cause and what is the meaning of this failure? Some twenty years ago Dewey proposed an explanation which went far to satisfy the conditions at once of genetic theory and of psychological analysis; in particular he definitely related the ill-adapted response to the feeling of disturbance in the emotion. Crile, who habitually confuses emotions, as feelings, with motions as reactions, does not conceive the problem. His chief contribution is to link up the biogenetic theory of the emotions with a mechanistic view of psychology (fifth paper) and a theory of disease (sixth and seventh papers). Whatever value may attach to the other theories in this connection, the theory of emotion, a somewhat hasty generalization in any case from the study, practically, of the one emotion of fear, seems to fall below several that have been attempted along the same general lines of phylogeny in that it fails to meet important questions regarding both the constitution and conditions of the response and the relation which it bears to the constitution of the subjective experience.

H. N. GARDINER

SMITH COLLEGE

REPORT

JOINT COMMITTEE ON STANDARDS FOR GRAPHIC PRESENTATION

Preliminary Report Published for the Purpose of Inviting Suggestions for the Benefit of the Committee

As a result of invitations extended by The American Society of Mechanical Engineers, a number of associations of national scope have appointed representatives on a Joint Committee on Standards for Graphic Presentation. Below are the names of the members of the committee and of the associations which have coöperated in its formation.

Willard C. Brinton, *Chairman*, American Society of Mechanical Engineers. 7 East 42d Street, New York City.
Leonard P. Ayres, *Secretary*, American Statistical Association. 130 East 22d Street, New York City.
N. A. Carle, American Institute of Electrical Engineers.
Robert E. Chaddock, American Association for the Advancement of Science.
Frederick A. Cleveland, American Academy of Political and Social Science.
H. E. Crampton, American Genetic Association.
Walter S. Gifford, American Economic Association.
J. Arthur Harris, American Society of Naturalists.
H. E. Hawkes, American Mathematical Society.
Joseph A. Hill, United States Census Bureau.
Henry D. Hubbard, United States Bureau of Standards.
Robert H. Montgomery, American Association of Public Accountants.
Henry H. Norris, Society for the Promotion of Engineering Education.
Alexander Smith, American Chemical Society.
Judd Stewart, American Institute of Mining Engineers.
Wendell M. Strong, Actuarial Society of America.
Edward L. Thorndike, American Psychological Association.

The committee is making a study of the methods used in different fields of endeavor for presenting statistical and quantitative data in graphic form. As civilization advances there is being brought to the attention of the average individual a constantly increasing volume of comparative figures and general data of a scientific, technical and statistical nature. The graphic method permits the

presentation of such figures and data with a great saving of time and also with more clearness than would otherwise be obtained. If simple and convenient standards can be found and made generally known, there will be possible a more universal use of graphic methods with a consequent gain to mankind because of the greater speed and accuracy with which complex information may be imparted and interpreted.

The following are suggestions which the committee has thus far considered as representing the more generally applicable principles of elementary graphic presentation:

1. The general arrangement of a diagram should proceed from left to right.

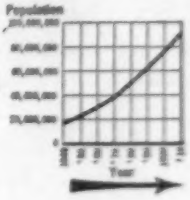

FIG. 1

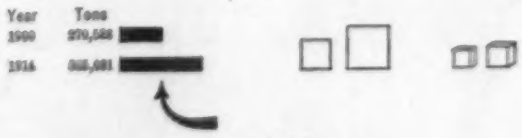

FIG. 2

2. Where possible represent quantities by linear magnitudes as areas or volumes are more likely to be misinterpreted.

3. For a curve the vertical scale, whenever practicable, should be so selected that the zero line will appear on the diagram.

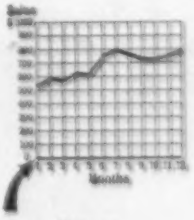

FIG. 3

4. If the zero line of the vertical scale will not normally appear on the curve diagram, the zero line should be shown by the use of a horizontal break in the diagram.

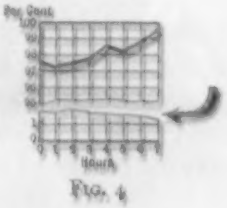

FIG. 4

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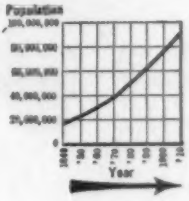

FIG. 1

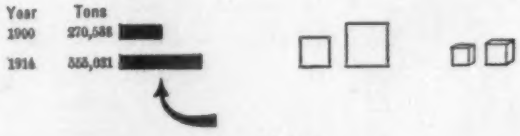

FIG. 2

2. Where possible represent quantities by linear magnitudes as areas or volumes are more likely to be misinterpreted.

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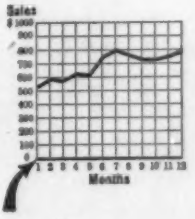


FIG. 3

4. If the zero line of the vertical scale will not normally appear on the curve diagram, the zero line should be shown by the use of a horizontal break in the diagram.

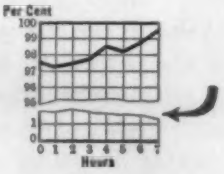


FIG. 4

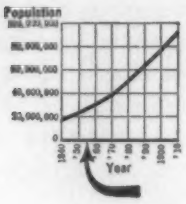


FIG. 5*A*

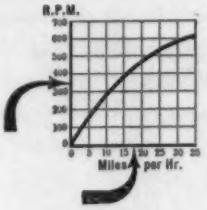


FIG. 5*B*

5. The zero lines of the scales for a curve should be sharply distinguished from the other coördinate lines.

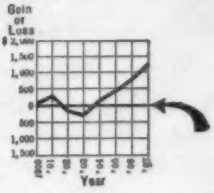


FIG. 5*C*

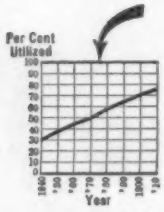


FIG. 6*A*

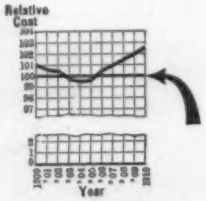


FIG. 6*B*

6. For curves having a scale representing percentages, it is usually desirable to emphasize in some distinctive way the 100 per cent. line or other line used as a basis of comparison.

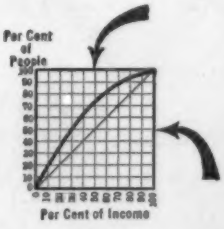


FIG. 6*C*

7. When the scale of a diagram refers to dates, and the period represented is not a complete unit, it is better not to emphasize the first and last ordinates, since such a diagram does not represent the beginning or end of time.

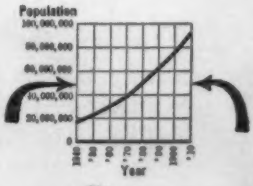


FIG. 7

8. When curves are drawn on logarithmic coördinates, the limiting lines of the diagram should each be at some power of ten on the logarithmic scales.

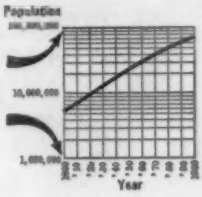


FIG. 8

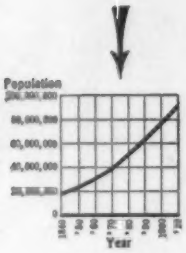


FIG. 9*A*

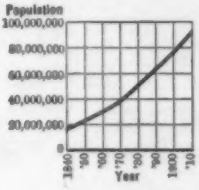


FIG. 9*B*

9. It is advisable not to show any more coördinate lines than necessary to guide the eye in reading the diagram.

10. The curve lines of a diagram should be sharply distinguished from the ruling.

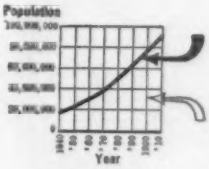


FIG. 10

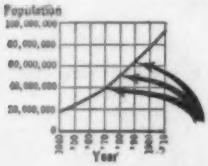


FIG. 11*A*

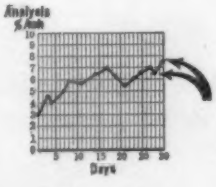


FIG. 11*B*

11. In curves representing a series of observations, it is advisable, whenever possible, to indicate clearly on the diagram all the points representing the separate observations.

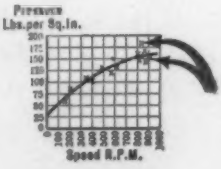


FIG. 11*C*

12. The horizontal scale for curves should usually read from left to right and the vertical scale from bottom to top.

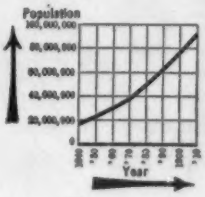


FIG. 12

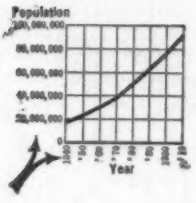


FIG. 13*A*

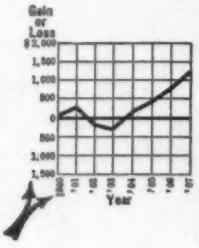


FIG. 13*B*

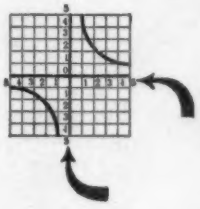


FIG. 13*C*

13. Figures for the scales of a diagram should be placed at the left and at the bottom or along the respective axes.

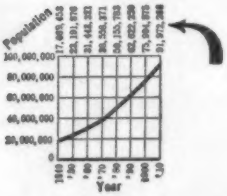


FIG. 14*A*

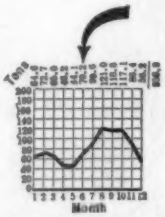


FIG. 14*B*

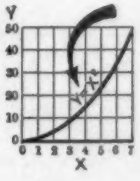


FIG. 14*C*

14. It is often desirable to include in the diagram the numerical data or formulæ represented.

15. If numerical data are not included in the diagram it is desirable to give the data in tabular form accompanying the diagram.

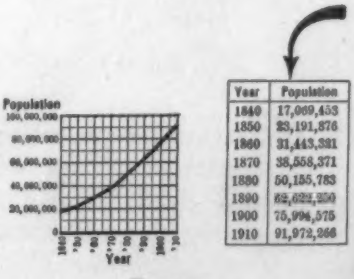


FIG. 15

16. All lettering and all figures on a diagram should be placed so as to be easily read from the base as the bottom, or from the right-hand edge of the diagram as the bottom.

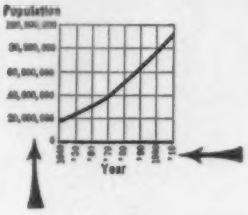
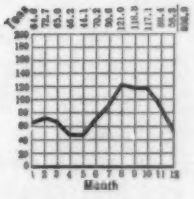


FIG. 16

17. The title of a diagram should be made as clear and complete as possible. Sub-titles or descriptions should be added if necessary to insure clearness.



Aluminum Castings Output of Plant No. 2, by Months, 1914.

Output is given in short tons.

Sales of Scrap Aluminum are not included.

FIG. 17

EDITORIAL ANNOUNCEMENT

Plans for starting the new JOURNAL OF EXPERIMENTAL PSYCHOLOGY which were announced in the PSYCHOLOGICAL BULLETIN for February 15, 1914, but which were temporarily postponed on account of the abnormal situation abroad, have been completed. It is now definitely decided to start the new JOURNAL next year. The first number will appear February 1, 1916. The JOURNAL will be issued bimonthly, alternating with the PSYCHOLOGICAL REVIEW. The two periodicals will be uniform in size and type.

Beginning with the next volume the scope of the PSYCHOLOGICAL REVIEW will be limited to the more general phases of psychological research, including statistics, historical studies, and theoretical discussions.

The JOURNAL OF EXPERIMENTAL PSYCHOLOGY will be devoted to the technical investigations of the psychological laboratory; to the illustration, description, and control of apparatus; and to the development of new methods of procedure.

HOWARD C. WARREN,
JOHN B. WATSON,
JAMES R. ANGELL,
SHEPHERD I. FRANZ,
MADISON BENTLEY.

BOOKS RECEIVED

HERRICK, C. J. *An Introduction to Neurology.* Philadelphia: Saunders, 1915. Pp. 355. $1.75.

JASTROW, J. *Character and Temperament.* New York: Appleton, 1915. Pp. xviii + 596. $2.50.

BERGSON, H. *The Meaning of the War.* (Introd. by H. W. Carr.) New York: Macmillan, (no date). Pp. 47.

HOLMES, A. *Backward Children.* Indianapolis: Bobbs-Merrill, 1915. Pp. 247. $1.00.

TAUSSIG, F. W. *Inventors and Money-Makers.* New York: Macmillan, 1915. Pp. ix + 138. $1.00.

MACINTOSH, D. C. *The Problem of Knowledge.* New York: Macmillan, 1915. Pp. xviii + 503. $2.50.

JELLIFFE, S. E. & WHITE, W. A. *Diseases of the Nervous System.* Philadelphia: Lea & Febiger, 1915. Pp. xiii + 796.

LUCIANI, L. *Human Physiology.* Vol. III. (Trans. by F. A. Welby; pref. by J. N. Langley; ed. by G. M. Holmes). London: Macmillan, 1915. Pp. x + 667. $5.00.

CONN, H. W. *Social Heredity and Social Evolution.* New York: Abington Press, 1914. Pp. vi + 348.

HARDY, T. J. *The Religious Life.* London: Longmans, Green, 1913. Pp. 300.

RICKLIN, F. *Wishfulfillment and Symbolism in Fairy Tales.* New York: Nervous & Mental Disease Pub. Co., 1915. Pp. 90. $1.00.

GIVLER, R. C. *The "Conscious Cross-Section."* Seattle: Univ. of Washington, 1915. Pp. vi+412.

NOTES AND NEWS

A SIX-WEEK summer school will be established at the George Washington University in the summer of 1916, under the directorship of Professor W. C. Ruediger, dean of the Teachers College in that institution.

H. D. KITSON has been appointed instructor in psychology in Harvard University.

THE twenty-fourth annual meeting of the American Psychological Association will be held at the University of Chicago, December 28, 29, and 30, 1915. The Hotel Del Prado, 60th and Blackstone Streets, has been selected as headquarters. The annual dinner-smoker, with the address of the president, Professor J. B. Watson, will occur at the Quadrangle Club on the evening of December 29th. The local member of the executive committee in charge of the meetings is Professor H. A. Carr of the University of Chicago. Communications which concern the program should be addressed to the secretary, Professor R. M. Ogden, University of Kansas, Lawrence, Kansas.

THE following items have been taken from the press.

DR. JOSEPH E. DE CAMP, of the University of Illinois, has been appointed instructor in psychology at the University of California.

G. HEIMANN, a pioneer in the field of eugenics, and H. Piper, extraordinary professor of physiology in the University of Berlin, well known for his contributions to the functions of the special sense organs, have been killed in the war.

DR. G. M. WHIPPLE has been advanced to the grade of professor at the University of Illinois.